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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/708,042

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Di-Jia Liu

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EXAMINER

DOVE, TRACY MAE

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/708,042	<b>Applicant(s)</b> LIU ET AL.	
	<b>Examiner</b> TRACY DOVE	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3 and 5-20 is/are pending in the application.
- 4a) Of the above claim(s) 13-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3 and 5-11 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

This Office Action is in response to the communication filed on 12/10/08. Applicant's arguments have been considered, but are moot in view of the new grounds of rejection. Claims 1, 3 and 5-20 are pending with claims 13-20 being withdrawn from consideration. This Action is Non-Final.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5-7 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Bregoli, US 4,548,876.

Bregoli teaches a fuel cell comprising a cathode 24, an anode 28, an electrolyte 26, a cathode collector 14 (interconnect), a separator plate 12 (current collector), an anode collector 30 (interconnect) and a separator plate 32 (current collector). See Figure 1. An oxidant gas is provided between the separator plate 12 and the cathode 24 (4:44-52). A fuel gas such as H<sub>2</sub> is provided between the separator plate 32 and the anode 28 (5:9-23). Catalyst particles 34 are provided on the anode collector 30 and may be comprised of the same materials used in the anode and cathode catalysts (5:45-58). Figure 1 shows a collector 30 having an offset plate fin configuration having first and second uncoated portions.

Note the limitation “for catalytic conversion...” is an intended use limitation. Thus the claims anticipated.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3 and 5-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blanchet et al., 2002/0197518.

Blanchet teaches a corrugated current collector for direct internal reforming fuel cells. The corrugations in the rows are such the corresponding peak regions have a finite off-set (abstract). Figure 14 shows a fuel cell having a cathode 112, an anode 111, an electrolyte 113, a cathode current collector 92 and an anode current collector 91. The fuel cell also contains bipolar plates 93 (0060). As shown in the figures, Blanchet teaches the collector 91 has first and second uncoated portions. Catalyst elements 15 are positioned within the corrugated current collector used as the current collector on the anode side of a direct internal reforming fuel cell in which the catalyst elements 15 serve as the internal reforming catalyst (0041). In internally reforming fuel cells, a steam reforming catalyst is placed within the stack of fuel cells to allow direct use of hydrocarbon fuels (0004). The current collector may be stainless steel (0046).

Blanchet does not explicitly teach the catalyst elements 15 are applied as a coating to the corrugated collector. However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one of skill would have found coating the reforming catalyst obvious in view of the teaching by Blanchet of having reforming catalyst elements 15. Both references apply the reforming catalyst at identical positions in the

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anodic current collector and Applicant has not shown any criticality to providing the reforming catalyst as a coating versus as the catalyst elements 15 of Blanchet.

***Response to Arguments***

Applicant's arguments with respect to claims 1, 3 and 5-11 have been considered but are moot in view of the new ground(s) of rejection.

***Allowable Subject Matter***

Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: claim 12 requires the fuel cell with the anodic interconnect having the catalytic coating to contain a solid electrolyte comprising yttria-stabilized zirconia. The prior art does not teach the anodic interconnect of the claimed invention used in a fuel cell containing the yttria-stabilized zirconia electrolyte of claim 12. The prior art teaches the internal reforming should be performed in isolation from a yttria-stabilized zirconia electrolyte (Baker 4,182,795). However, the claimed invention permits for both the internal reforming and oxidation of the hydrogen-rich reformat at the anode in the same fuel path of the same fuel cell (page 9 of remarks). Thus the internal reforming of the claimed fuel cell is not performed in isolation from the yttria-stabilized zirconia electrolyte.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday & Thursday (9:00-5:30).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

February 19, 2009

/TRACY DOVE/

Primary Examiner, Art Unit 1795